LCLS Room Data Sheet #	1.9-1037	Far Experimental Hall - Overall	Revision 2

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REVISION INFORMATION

Rev. 2 Added figure for eyewashes, Added restrooms, no shower. Added door description
Added 2 welding outlets on north wall, Added dimensions
Hutches: Deleted N2 central gas system. Added figure No. 3
Electrical changes. Updated Code and Standards. Added Process Cooling Water requirements.
Added LCLS ESD 1.9-102, 1.9-103 and 1.9-104. General Changes and corrections
Clarifications to cable trays requirements

ROOM DATA SHEETS

System Manager: Stefan Moeller/ John Arthur

FACILITY COMPONENT

FAR EXPERIMENTAL HALL (FEH) Overall - ROOM DATA SHEET

Name of Building	Far Experimental Hall (FEH)		
Organization or Department	SLAC, Stanford University		
Net area	906.5	sq. meters	9,752 sq.ft
Critical dimensions	**H:**	46 ft diameter tunnel	
	W:	46'	
	L:	212'	
Hours of operation	Facility is open 24/7/365		
Users/Occupancy	30		
Building orientation	FEH is located at the end of the X ray and transport tunnel and therefore the last building of the LCLS to the east.		

FUNCTIONAL OBJECTIVE

Similar to the NEH, the FEH will have three experimental hutches and the ancillary Control Area and Prep Area adjacent to the hutches. Unlike the NEH, the primary and the split +/- 3/4 degree X-ray beams terminate in these three hutches. Laser bays/rooms are housed within the hutch area.

PLANNING CONSIDERATIONS & CRITICAL FACTORS

Floor level is to remain constant throughout the entire length LCLS at - **247'-3"**. The FEH is ~219 m downstream of the the NEH. It is assumed that such a distance will place the FEH approx. 27 m below grade, under the hill on the east end of the site. There is also a requirement for a tunnel or passage from the existing Bldg. # 750. This egress tunnel should be designed to handle installation of equipment in the FEH area and has a fire door. A second egress is on the west end leading through a fire door into the x-ray tunnel. The primary beam hutch requires shielding on the walls where the beam terminates. Hutch wall thickness is to contain 1/8in of lead. Like in the NEH, the longer side of the hutch sould be parallel to the direction of beam travel. The hutches in FEH should also have at least 4' x 10' equipment access capability. Remaining program for FEH to be similar to NEH.
Restrooms are planned on the east side of the FEH, no shower is planned.

FINISHES

Wall	Reinforced concrete, gunite, painted surface (white)
Ceiling	Reinforced concrete, gunite, painted surface (white)
Floor	Sealed concrete with epoxy coating- Refer to LCLS ESD 1.9-103 General Concrete Guideline, and LCLS ESD 1.9-102-Accelerator Tunnel Construction Tolerance Specification
Base	None
Doors	Two fire doors per applicable Codes. A) Entrance tunnel- 14 ft: Provide one roll-up door (10 ft wide min) for equipment access and 3 ft man-door B) Access door to X-Ray Tunnel: Provide doors minimum 6 ft wide for equipment access.
Fenestrations	None
Acoustical	Refer to HVAC section

APPLICABLE STANDARDS

29 CFR Part 1910 Occupational Safety and Health Standards Dept of Labor, 29 CFR Part 1926 Safety and Health Regulations for Constructions Dept of Labor, Uniform Building Code (UBC) 1997 including appendixes, National Electric Code (NEC) 2002, Uniform Mechanical Code (UMC) 2003 including appendixes, Uniform Plumbing Code (UPC) 2003 including appendixes, Uniform Fire Code (UFC) 2003 including appendixes, California Code of Regulations Title 8 Industrial Safety, Title 19 Public Safety, NFPA 70 National Fire Codes, National electrical Safety Code ANSI C2, Occupational Safety and Health Act (OSHA), General Services Administration 41 CFR part 101-19, Environmental Protection Agency 40 CFR Parts 264 and 265, SLAC Environmental Safety & Health Manual, General Industrial Activities Storm Water Permit (SLAC Permit), NFPA 101 life Safety Code, Title 24-Energy Code, DOE standard 10 CFR Part 435, ASHRAE/IES Standards 90.1, NFPA Standard 13 and SLAC Fire Marshal requirements, LCLS Cabling Standard, SLAC LOTO

VIEWS & SCHEMATICS (N. T. S.)	FIGURE No. 1

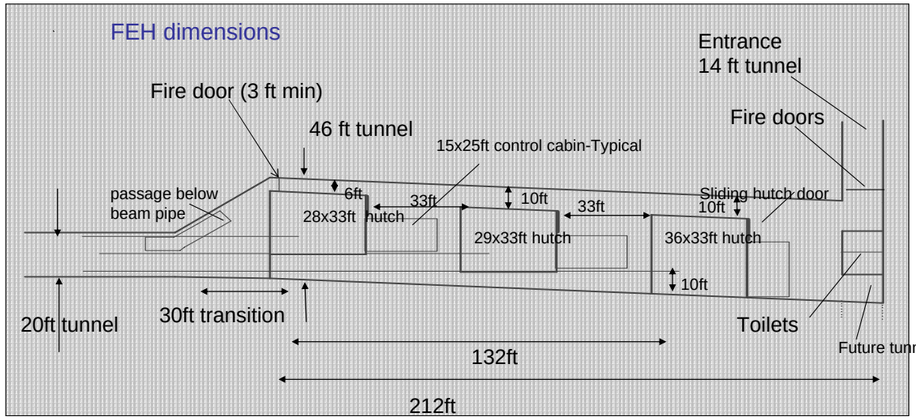
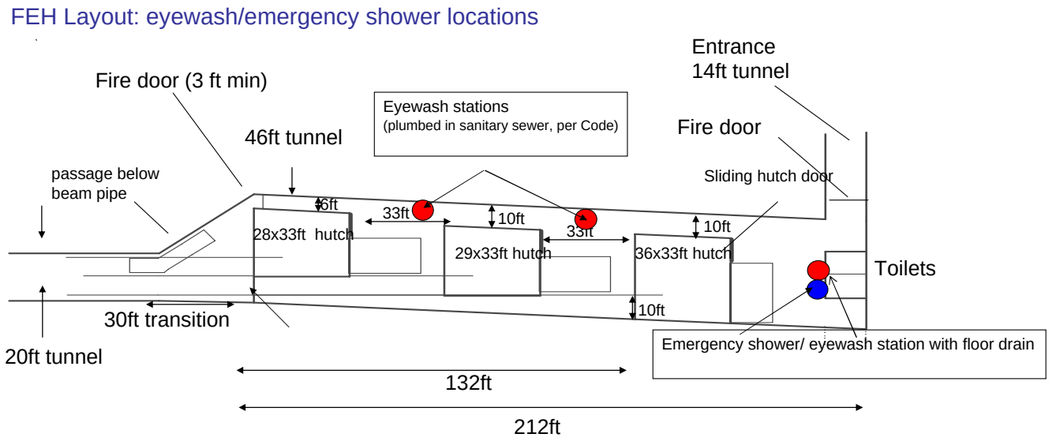


FIGURE No. 2



MECHANICAL REQUIREMENTS						
	HVAC	☒	Heating system	Temp:	☐	Mechanical humidification
		☒	Air conditioning	Temp: 72 F	☒	Direct exhaust system
		☐	Direct supply		☐	Positive pressure system
		☐	Indirect supply		☐	Negative pressure system
		☒	Smoke control system		☐	Standard registers
		☒	Temperature sensors connected to SLAC's DDC system		☒	Requirement for gases
		List of Gases - a) Dry compressed air: Refer to LCLS Compressed air Specification b) Clean dry oil-free compressed air 20 SCFM, 100 psig, 1/2" outlet. Provide every 50 feet on perimeter (concrete walls). Provide with shut off valve and pressure gauge.			1) HVAC system Noise Criteria for the FEH open area: No higher than NC: 40. 2) Air temperature fluctuation to be +/- 1 deg F in the hutches for stability. In other areas air temperature +/- 2 deg F. 3) Mechanical Pump exhaust line in hutches. Mechanical Pump exhaust line. Green line for Purge gases and HEPA filter's. To be located in Prep Area. GAS LINES to +4 degree area (Prep-Area) also.	
	Communications	☒	Telephone-one station (2 lines) every 50 ft along perimeter walls		☐	PA speakers
		☒	Data port-one station (2 data ports) every 50 ft along perimeter walls		☐	PA station
		☐	Payphone		☐	CCTV camera
		☒	Fire alarm station		☐	CCTV monitor
		☐	Intercom			
		Comments: 1) Cable trays: Double 24inch to be installed along the perimeter walls of FEH. Provide cable trays at 8'-6" ft AFF. 2) Cable trays should be made from galvanized steel. Provide each cable tray with 1-4#0 bare copper wire for grounding. 3) Provide 6" deep cable tray for I&C cables and control cables for DC racks, and 4" deep for cables for DC racks.				

	Plumbing/Fire Protection	☒	Hot water system	☒	Electric water cooler	
		☒	Cold water system	☐	Drinking fountain	
		☒	Process Cooling Water	☒	Smoke detection system	
		☒	Waste drain	☒	Wet Sprinkler system	
		☐	Floor drain	☒	Eye wash/Shower	
		☒	Trench drain			
		Comments: Process Cooling water (PCW): 10 GPM, 25 PSI at 68 F supply at each location. Refer to LCLS Water Cooling Specification. Provide one location every 50 feet along the perimeter walls. Terminate with shut off valve and pressure gauge. Locate piping on wall				
ELECTRICAL REQUIREMENTS	**Power supply**	☐	208 volts, 3 phase outlets	☐	Uninterrupted power supply	
		☒	110V , 1 ph, 20 amps outlets-See comments	☒	Special electric-see comments	Type:
		☐	Emergency power			
		Comments: 1) Provide two (2) welding outlets (480V, 3 phase, 100 amps) on north wall equidistant of FEH. 2) Provide double duplex receptacles along the perimeter walls, every 50 feet. Install not higher than 42"AFF				
	Lighting	☒	Light fixtures	☐	Remote lighting control	
		☒	Fixture type I: Down light	☒	Light switches	
		☐	Fixture type II: Bollard (exterior)	☒	Lighting level	FC: 75
		☒	Emergency lighting			
		Comments: a) All conduits are surface mounted. Low profile fixtures preferred. b) Provide minimum three (3) lighting zones for the entire FEH area (equally spaced) c) Refer to LCLS ESD 1.9-104 Emergency Lighting Specification				
RADIATION/SEISMIC/VIBRATIONS ISSUES	Comments: 1- All equipment (HVAC, cable trays, panels, etc) and systems are to be seismically braced and restrained per SLAC Seismic Standards and per Code. 2- Vibration criteria :100 micro inch/sec.					
SPECIAL REQUIREMENTS FOR EQUIPMENT						
ENVIRONMENTAL NEEDS	1.0	Radiation protection is a must for surrounding facilities.				

Figure No. 3- FEH LAYOUT